

**Developing Youth Leadership through Community Gardening: Opportunities and
Outcomes**

Honors Project

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Abstract

Community gardens exist throughout Ohio and are associated with a variety of organizations. Little prior research has looked at youth involvement and leadership in these gardens. This study examined leadership opportunities available to youth and the types of skills learned through gardening. Garden leaders (N=71) completed an online survey about their gardens. Preliminary findings show leadership skills are encouraged by garden involvement. These opportunities range from selecting what to grow to making decisions about how to use the garden's money to teaching others how to cook. Gardening provides an outlet to better develop teamwork, communication and critical thinking skills. Leaders should use a variety of ways to involve youth in more leadership roles.

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Table of Contents

Abstract.....	2
Acknowledgements.....	4
List of Tables & Figures	5
Chapter I	6
Introduction	6
Significance of the Study	9
Purpose of the Study	11
Objectives of the Study	11
Key Terms	12
Chapter II	13
Review of Literature	13
The Benefits of Gardening	13
Types of Gardening Programs	15
Roles of Youth Gardeners	17
Summary	18
Chapter III	19
Methodology	19
Research Design	19
Survey Population	19
Limitations of the Study	20
Instrument Design	21
Data Collection	22
Variables	23
Data Analysis	24
Chapter IV	25
Findings	25
Garden Information	25
Youth Involvement	25
Objective 1	27
Objective 2	28
Objective 3	30
Skills Used Outside of the Garden	31
The Relationship between Skills, Environmental Concern and Food Issue Awareness and Activities	33
Chapter V	36
Summary, Key Findings and Implications	36
Purpose of the Study	36
Objectives	36

Limitations of the Study	36
Analysis of Data	37
Key Findings and implications	37
Objective 1	37
Objective 2	39
Objective 3	41
Implications of Key Findings	42

List of Tables & Figures

Table 1: Why Youth Participate in Gardening Programs	26
Table 2: Leadership Opportunities Available to Youth	27
Table 3: Positive Impact of Gardening on Various Skillsets	29
Table 4: Resources Wanted by Garden Leaders	31
Table 5: <i>T</i> -test Results	34

Chapter I

Introduction

Gardens throughout the United States offer a variety of benefits to everyone involved, but especially youth gardeners. Gardening is one outlet that could help youth to develop and exercise leadership skills. According to Waliczek et al., potential benefits of gardening include an increase in self-esteem, a reduction in stress and an improvement in academics. Gardening participants also tend to learn and practice important skills such as “patience, work ethics, and goal systems,” (Waliczek et al., 2000). Sandler et al. looks at a specific case study in the Sonoran desert that showcases the ability of a gardening project to reconnect youth to their community through a youth-led project (Sandler et al., 1995).

Gardening has also been noted as a path for positive youth development. Schusler & Krasny (2010) found a strong link between environmental action (deliberate choices made to achieve a specific goal), as opposed to environmental behavior, and personal growth in youth. The National Research Council and Institute of Medicine’s Committee on Community-Level Programs for Youth (Eccles & Gootman, 2002) defined four categories for the key components that promote well-being. These four categories are physical, intellectual, psychological and emotional, and social development. Youth are able to grow in these four categories based on the opportunities provided to them by garden facilitators. Opportunities arise from the creation of safe spaces, providing of structure, building of respectful and trusting relationships, bridging of differences and creation of opportunities for all learners to contribute, setting of clear and rigorous expectations and providing of opportunities for meaningful contribution (Schusler & Krasny, 2010). As all of these studies show, the benefits of gardening for youth are numerous, and gardens provide an outlet for youth to develop their leadership skills.

One interesting finding noted in a paper by Waliczek et al. states that the type of benefits one receives from gardening changes over time. When first beginning to garden, gardeners often seek physical and tangible rewards. This would be the physical produce of a vegetable garden, or the economic benefits from a fruit garden, for example. Over time, however, gardeners tend to shift their goals. Instead of desiring a physical benefit, gardening becomes an outlet for socialization simply creating a peaceful space (Waliczek et al., 2000). This would seem to imply that if gardening initiatives were implemented early on in a child's life then they could grow into leaders who would then promote the benefits of gardening to younger children beginning their own gardens.

There are many different types of gardens and gardening programs found throughout the United States. School gardens are one of the most prevalent types. Different programs such as KinderGARDEN, the Project GREEN school garden program and the Junior Master Gardener Program help schools integrate gardening into their daily curriculum. These programs provide guidelines and suggested lesson plans for teachers to follow. Other than school gardens, programs such as 4-H, Girl Scouts and the Future Farmers of America (FFA) provide ideas and incentives for youth to become involved in gardening. These programs range from allowing members to participate in a class teaching them about gardens to designing an entire project around gardening. Unlike school gardens, participation in these different programs is not necessarily mandatory and it is the member's choice whether to pursue a gardening related project. Furthermore, community gardens are a third outlet for youth to become involved. Community gardens, however, do not always have formalized programs for the youth to become involved in.

Current youth gardening research has focused mainly on what the benefits of youth gardening are. This involves skills learned or benefits received instead of how the skills are then applied and used. While it is very important to identify the specific benefits of gardening, skills acquired serve no purpose if they are not then used and put into practice. This study surveyed garden leaders throughout Ohio about youth involvement in the garden and what projects outside of the garden (if any) the youth were involved in. Involvement outside of the garden may range from participating in an activity to taking on a central leadership role. This study included a question asking whether garden leaders knew of ways the youth applied the skills used in gardening outside of the garden. This helped to not only identify leadership opportunities and skills learned in the garden, but also to see current opportunities for external applications of gardening skills. Identifying specific ways gardens provide leadership opportunities for youth will further prove the importance of gardens.

With regards to leadership, youth participation is partially determined by how adult leaders view the youth. In a study by Lekies et al. in 2007, different garden leaders held drastically different views of the involved youth. Some leaders saw them as entirely incompetent and unable to focus and efficiently complete the necessary tasks. Other leaders, however, viewed the youth gardeners as their equals and tried to empower them to take on decision-making roles. These drastically different views are important because garden leaders play a large role in deciding the level of participation of youth. However, they also reported that a number of garden leaders shifted their views of children after participation in Greener Voices, an initiative to increase youth participation in gardening. Garden leaders began to see youth as able-minded individuals capable of working independently. When adults realize what children are capable of, they are more likely to work on empowering them and giving them leadership roles (Lekies et

al., 2007). These leadership roles in turn will teach youth important skillsets transferrable to other aspects of their life.

Significance of the Study

Many benefits from gardening have already been identified and promoted. Gardens are created in order to allow people access to benefits such as a peaceful escape and a stress-free environment or more tangible benefits such as fresh produce or economic gain. Gardens, especially those involving the youth, are a place to learn and teach. Therefore, it is important to identify what types of gardens are most successful in doing this.

By comparing the gardens which are most successful in engaging youth and encouraging youth leadership to the gardens with minimal youth participation, specific differences in methodologies can be identified.

Differences between gardens include location, age of involved youth, affiliation and existing opportunities for youth to grow into positions of leadership. Location refers to where a garden is—at school, in a neighborhood, in a downtown area, at a daycare, etc... The age groups involved in a garden could impact the level of youth participation. For example, a garden focused on reaching six year olds may offer participatory programs where the youth are able to take home an apple they helped grow or a craft representing a plant's life cycle instead of offering opportunities to lead a garden on their own. On the other hand, a garden for teenagers may offer more leadership opportunities than arts and crafts learning classes. Affiliation of gardens could also impact youth involvement based on if the garden is tied to a public or private school, a youth organization such as 4-H or FFA, or if the garden is completely independent of any organization and was created by and for its surrounding community. Finally, opportunities for youth to grow could impact involvement because setting goals may increase participants'

drive to work in the garden. For example, if a paid garden assistant position is offered to youth, they may be more inclined to lead programs and help other people garden if they know they could rise to a paid position.

Identifying differences between the most successful youth gardens and the less successful ones could help program designers create gardening programs designed to develop specific skills such as leadership skills. This would allow the gardens to engage youth more effectively by identifying specific programs that inspire the youth to become involved.

Research identifying which specific youth gardening programs are the most successful would be beneficial both economically and educationally. Economically, schools and other programs could invest more in the programs that are highly successful in encouraging youth involvement instead of continuing to funnel money into programs that do not prove to benefit the youth as much. Educationally, studies identifying successful youth gardens would allow people to better reach the youth. There are reasons certain programs are more effective than others, and the practices of the effective programs should be applied to less successful programs to help improve them.

Hopefully, research into these areas will result in an increase in youth interest and involvement in gardening throughout the country. It will help to better formulate programs to reach the youth and encourage currently involved youth to reach out to their peers and help them experience the benefits of gardening. Gardening is something that benefits all ages, so increasing involvement of the youth will magnify these benefits.

Youth involvement in gardening has been shown to benefit many different skillsets. This survey asked garden leaders to assess the level of impact gardening had on leadership, teamwork, communication and critical thinking skills and what types of opportunities were available to their

youth, be it simply participating in normal gardening activities or helping make decisions about money use. The respondents were also asked what types of resources they would like to have available to them in the future. Not surprisingly, an overwhelming majority wanted more resources about developing leadership skills in youth. An increase in the availability of leadership development resources could strengthen the already positive effects gardening has on the leadership, teamwork, communication and critical thinking skillsets.

Purpose of the Study

This study is designed to identify leadership opportunities available to youth involved in gardening and the benefits of participating in a gardening program. These opportunities include learning leadership skills, practicing these skills, leading projects of their own, helping run the garden or a variety of other leadership activities. Benefits include improving different skillsets, such as leadership or communication, transferrable in other areas of life. Gardens surveyed are limited to those located in Ohio that involve the youth in some fashion. This may range from hosting classes youth can take to youth helping garden plots of land to allowing the youth to grow into leadership roles.

Objectives of the Study

This study was created to understand the leadership opportunities available through community gardening. A survey was created to answer questions about individual garden characteristics as well as the opportunities available to young gardeners. Through the survey responses, specific questions related to youth involvement could be answered. These are listed below.

1. What leadership opportunities are currently available to youth?
2. What skills have youth developed from gardening?

3. Has gardening positively impacted important skillsets?
4. What leadership opportunities have youth demonstrated outside of the gardening program?
5. What resources would benefit garden leaders?

Key Terms

Youth: In this study, youth are considered to be any age younger than nineteen years.

Community Garden: The American Community Gardening Association broadly defines community gardening as “any piece of land gardened by a group of people.” This study applied this definition to identify a large range of gardens in Ohio. This definition includes gardens in urban, suburban and rural areas as well as at a school, hospital, neighborhood or other location. Also, gardens may grow flowers, food or a combination of the two (ACGA website <http://www.communitygarden.org/learn/>).

Leadership: According to Dictionary.com, leadership is “the position or function of a leader, a person who guides or directs a group,” (<http://dictionary.reference.com/browse/leadership>). Dictionary.com further defines a leader as “a guiding or directing head,” (<http://dictionary.reference.com/browse/leader?s=t>). In this context, researchers specifically looked at how youth involved in a community garden showed leadership.

Chapter II

Review of Literature

Before the survey was distributed to gardens in Ohio, articles pertaining to youth garden involvement were reviewed. These articles did not always focus on youth involvement, but often looked at the entire gardening experience and specific case studies. Some of the articles looked at programs in the United States while other looked at programs in other countries. The literature review provided helpful insight into the benefits of gardening, types of gardening programs and the roles of youth gardeners.

The Benefits of Gardening

Gardening has often been cited as a potential host for more positive attitudes towards school, the environment, food, work and relationships. With the increased urbanization of the 20th century, many movements promoting garden programs have sprouted throughout the United States in order to maintain connections with the natural environment and to instill a traditional work ethic. Current studies have shown involving youth in gardens does accomplish many of these goals.

Interest in gardening must be created in youth gardeners. Lekies and Eames-Sheavly 2007 showed interest may be created by gardening skills, participation in planning and management activities and length of time involved (Lekies & Eames-Sheavly, 2007). Also, adults need training and support in order to create opportunities to empower the youth in their garden (Eames-Sheavly et al., 2007). Two other studies, Lekies and Eames-Sheavly (2008) and Lekies et al. (2007) examined ways to increase youth participation in community gardens through Greener Voices. Greener Voices was designed to enhance youth participation at different gardening sites.

A study by Rahm (2002) looked at the learning opportunities from gardening. Skills can be learned in a variety of ways. In this inner-city garden, youth gardeners learned from master gardeners by listening to them, watching them and then doing the gardening themselves. They also posed questions when appropriate and wanted to understand why different things were done certain ways. Both the environmental features of a project, observation and involvement led to authentic learning opportunities in the garden (Rahm, 2002). The building of different skillsets in this way allows youth to see the relevance of gardening in their lives. It develops science, work and life skills (McArthur et al., 2010; Fusco, 2001).

A case study by Pothukuchi (2004) looked at the creation and execution of Hortaliza, a community garden in Detroit. Several youth residents along with adults were involved in the creation and management of the garden. Youth were able to grow and take home different types of vegetables from Hortaliza. After only one season, children showed an increased interest in and knowledge of eating fruits and vegetables, nutrition, plant ecology and gardening. Youth were also able to make new friends, improve the neighborhood appearance and work with adults. They wanted to continue working in the garden after the first season.

Waliczek et al. (2001) looked at how school gardens affected interpersonal relationships as well as students' attitudes towards school. This study showed students expressing a more positive attitude towards school when they were allowed to have more individual participation in gardens. Seventh grade students displayed the most positive interpersonal relationship scores out of all the students ranging from second to eighth grade. Teacher surveys attributed this to their independent work. Younger students work under more supervision, so the increased freedom as students age could lead to increased socialization. Independence seemed to have the same effect on students' attitudes towards school. More positive attitudes towards school were generally seen

in students who had more independent participation in the gardens. Unfortunately, this study also showed a more negative view towards school for adolescents. This could be attributed to the fact that the survey was distributed at the end of the school year when teenagers may have more negative views towards school (Waliczek et al., 2001).

In an earlier study by Waliczek et al. (2000), several physical, psychological and nutritional benefits of gardening were identified. These benefits include growing food, socializing with friends, feeling relaxed and safe in a plant environment, learning about plants, improving the home or community, exercising, stress reduction, improved self-esteem and less depression. This study looked at how adults perceived children to be receiving the benefits of gardening instead of how children reported experiencing the benefits of gardening. All adults involved in this study believed the gardens taught the children about nature and the environment and made them feel closer to the adults they gardened with. Growing fruits and vegetables was the most perceived benefit of gardening followed by learning about plants, socializing with garden friends and feeling relaxed with gardening friends. These findings help further the belief that gardening is good for self-esteem and social well-being (Waliczek et al., 2000). Robinson and Zajicek (2005) also found that youth participating in a year-long garden program showed an increase in life skills, teamwork skills and self-understanding. It noted that these skills help to encourage “responsible and productive citizens” (Robinson et Zajicek, 2005).

Several studies have also looked at the impact of gardening on eating habits. School gardens are becoming increasingly popular because they promote healthier decisions. Overall, the studies have found that gardening leads to healthier eating habits. This includes increasing knowledge of healthy eating as well as increasing fruit and vegetable consumption in children (Lautenschlager & Smith, 2008; Lautenschlager & Smith, 2007; Harmon & Maretzki, 2006;

Heim et al., 2009; Koch et al., 2006; Lautenschlager & Smith, 2007; Libman, 2007; Lineberger & Zajicek, 2000; McAleese & Rankin, 2007; Morris & Zidenberg-Cherr, 2002; O'Brien & Shoemaker, 2006; and Robinson-O'Brien et al., 2009).

Additionally, Smith and Motsenbocher (2005) quantified the effects of gardens on students' achievement scores. After participating in once weekly gardening activities and hands-on classroom activities, science achievement test scores significantly increased in the test population as compared to the control group (Smith & Motsenbocher, 2005).

All of these studies show the positive impacts gardening has had on its youth participants. Gardening has improved youth achievement, skill base and attitude towards school. Another study, Klemmer et al., also showed that garden participants had a significantly higher score on a science achievement test than the control group (Klemmer et al., 2005).

Youth gardening has also been shown to increase students' sense of responsibility and improve their attitudes towards the environment. Aguilar et al. (2008) showed that gardening, whether at home, school or elsewhere, had a positive impact on environmental attitudes. The study did not show whether specific curriculum influenced this impact, though. A study by Skelly & Bradley (2007) also showed a positive impact on sense of responsibility and attitude. This study categorized the garden types into low, medium or high intensity gardens and whether the gardens were for vegetables, flowers or a combination of the two. No garden type proved superior to others.

A review of gardening studies by Blair (2009) showed various positive effects from gardening. Nine out of 12 quantitative studies showed positive behavioral improvement and an increase in student achievement when school gardening was offered. Qualitative studies produced similar results. Studies examined also showed that gardening increases motivation and

enthusiasm, improves the sense of self and positively impacts teamwork, community and parental involvement. In addition, teachers in school gardening programs need support and training (Blair, 2009).

Types of Gardening Programs

There are a variety of types of gardening programs throughout the U.S. First, gardens can be classified by what is grown there. These range from the traditional flower or food garden to a water garden to an animal garden. Gardens can also be tied to a school, be designed to follow a specific curriculum or be completely independent of educational influences. Some programs desire a high level of participation from youth gardeners while others just give youth the opportunity to be present and learn gardening skills. Furthermore, a variety of ages and generations can be involved in different gardening.

One example of a water garden, Wonders of Water Garden, was created from a need for environmental education, water quality issues and the desire to play in an aquatic environment. Children need more of a direct connection with nature, and this garden is one outlet. This water garden is interactive and provides a variety of experiences. It allows children and adults to learn about water quality, the issues surrounding water quality, relationships between water and nature and why water is so vital to human life. Sections of the garden include the “Claude Monet Bridge,” “Garden Arbor,” “Observation Deck,” “Serpentine Bridge and Bog Garden,” “Carnivorous Garden,” and the “Fiddlehead Courtyard.” These viewing areas allow guests to see the variety of plants, including carnivorous plants, and landscaping, including a waterfall (Byrd et al., 2007).

During World War I, gardens grew in popularity as a way to supplement the current food supply. The United States School Garden Army, one of the first attempts at nationalizing a

garden program, extended agricultural education to urban and suburban youth instead of focusing just on the rural youth. This program did not aim just to increase food production; it served to instill a more traditional work ethic in the urban youth who were increasingly removed from the food production system. Another program, the National War Garden Commission, complemented the United States School Garden Army by encouraging home, community and workplace gardening. These efforts are examples of gardening with a specific purpose and through certain organizations (Hayden-Smith, 2007).

Many researchers and gardeners cite intergenerational interactions as a benefit of gardening. One group in Canada strived to meet this exact goal. They designed the Intergenerational Landed Learning Project for the specific purpose of bringing community elders, elementary or middle school aged students and teachers together in order to help raise environmental consciousness and teach how to grow food. Participants met at an urban organic farm for a year and were grouped into “Farm Friend Teams.” These teams called for three to five elementary or middle school students and one or two community adults to work together and produce food crops in their garden bed. After observing several cycles of this program, researchers saw indication of the effectiveness of the intergenerational approach towards environmental attitudes (Mayer-Smith et al., 2007).

Some gardens are also created to reach specific groups of people. Urban youth, especially those considered economically disadvantaged, do not always have access to opportunities for interaction with the natural environment. The Brooklyn Botanic Garden in New York established a teaching garden in 1914 to use hands-on gardening to teach children practical skills as well as life lessons. The Brooklyn Botanical Garden’s Children’s Garden and Children’s Gardening Program are now models for many other children’s gardening programs. Today, their Project

Green Reach program seeks to involve students from Title I schools (schools with a high percentage of children living in impoverished areas and on free or reduced programs). The Project Green Reach program is unique because it strives to make gardening accessible to disadvantaged students despite common barriers including funding and transportation. This program encourages inquiry-based learning, which the National Science Foundation highly recommends as an instructional approach (Morgan et al. 2009).

One last example of a type of garden is an after-school gardening club. While some of these clubs are rather unstructured and consist of interested persons meeting and gardening together with no formal lesson plan, some use specifically defined learning plans. For example, the club in the 2007 study, O'Brien and Shoemaker adopted eight lessons from the Junior Master Gardener: Health and Nutrition from the Garden curriculum. The club, however, met for a total of ten weeks. This club had a hands-on emphasis and met after school instead of during school hours.

The previous five examples of garden types are not all-encompassing. Any of these gardens are able to provide benefits listed in the previous section. These examples are used to help explain the wide array of types of gardens youth have the opportunity to participate in. The programs used by each of the gardens may have a loose structure whereas other gardens follow clearly-defined lesson plans. All of these gardens encourage different levels of youth participation.

Roles of Youth Gardeners

The role of youth gardeners varies greatly from garden to garden. In some gardens, youth are simply participating in a lesson plan. They have a defined role as a student and are not called to take more of a leadership role. Other programs offer them an opportunity to take on vital roles

in the creation or care of a garden, including planning activities, working together with adults, making decisions about the garden and demonstrating techniques to others (Lekies et Eames-Sheavly, 2007).

One exceptionally successful youth gardening program by the Pascua Yaqui Educational Group Effort combines “intensive basic skills instruction with pre-employment skills training,” (Sandler et al. 1995). This program strives to give former students and troubled youth a sense of belonging to the community as well as instilling a sense of value in participants. There is a heavy focus on service learning, and participants are given the opportunity to plan a project on their own. This group chose to create a Native American Yaqui garden. The group of 13 gardeners included two teen parents, two youth offenders and another student with a history of substance abuse. Despite the disadvantaged backgrounds of several participants, the students achieved great success with through the program. Every single one of them successfully completed the program’s academic goals and improved their standardized measurement scores. This program suggests that community service such as gardening helps improve lives of at-risk students by creating personal ties to the community. Five of the 13 projects examined (the Pascua Yaqui Education Group Effort was only one) showed an improvement in attitude towards communities. Attitudes were most improved in the more at-risk youth when compared with less at-risk youth. The chance to lead a project and create ties to their community helps students feel more connected and invested in their communities (Sandler et al. 1995).

Summary

The literature review allowed for insight into the general practice of community gardening. The variety of articles shed light on the range of benefits of gardening, the different types of gardening programs and the different roles youth take on in gardens.

Chapter III

Methodology

This study was designed to look at youth involvement and leadership in community gardens through the state of Ohio. Different opportunities are presented to youth gardeners in different gardens.

Research Questions

The research questions that guided this study were as follows:

1. What leadership opportunities are currently available to youth?
2. What skills have youth developed from gardening?
3. Has gardening positively impacted important skillsets?
4. What leadership opportunities have youth demonstrated outside of the gardening program?
5. What resources would benefit garden leaders?

Research Design

The study used an online survey that was sent to garden program leaders in Ohio. This study was designed to reach out to a variety of garden types to learn about youth leadership in community gardens.

Study Population

The population of interest for this study was gardening program leaders located in Ohio. A message was sent to Ohio State University Extension and other ListServes to identify gardening programs with youth components. Internet searches were also used to identify community gardens throughout Ohio. The first search used the keywords “School Gardens in Ohio,” and the second search used “Youth Gardens in Ohio.” Several school gardens were identified through a

listing of recipients of school garden grants through the Whole Kids Foundation. An article called “Gardening with Children and Youth: Ohio Master Gardeners Resource Guide” contained another list of youth gardens in Ohio. For many school gardens, the school principal was used as the contact. After identifying different community gardens and community gardening associations with email contacts, including the American Community Gardening Association, the potential respondents were split into two groups. One group consisted of emails reaching gardeners who were directly asked to respond to the survey, and the other group consisted of community gardening coordinators who were asked to contact the gardens they worked with either through a provided write-up in their ListServ or by emailing the link to their gardeners instead of using provided links on website. One garden coordinator sent us a list of gardeners and had us send the survey directly to his contacts.

Instrument Design

The survey used for this study asked details such as garden location, the age of youth involved, extent of youth involvement, reason for participation, actions of the youth while gardening, whether the gardening program is based on some type of manual, what skills have supervisors observed the youth developing and how youth use these skills outside of the garden.

Some questions were given in a multiple choice format, whereas others used Likert Scales. Yes or no questions also appeared throughout the survey. Open ended responses were possible for several of the questions.

Data Collection

When identifying potential respondents, the researcher tried to omit gardens outside of Ohio. Gardeners located outside of Ohio were asked to discontinue the survey. Gardens in Ohio were asked to participate regardless of age or the presence of formal youth programming. A

total of 213 individual surveys were sent out in addition to 34 group requests to send out a write-up in a ListServ message. Of the 213 individual surveys, 115 were at the request of a coordinator.

Emails were sent out beginning December 2012. In 2013, more community gardeners were asked to participate. More surveys were sent out in early January. Each group received two reminders. Final reminders were sent out in late January. The survey was officially closed with 71 completed surveys.

The survey concluded with a request for contact information if the gardener was interested in possibly winning a reward for completing the survey. If the respondent chose so, they were entered into a prize drawing for one of four \$50.00 gift cards to a gardening supply center of their choice.

Variables

Youth Involvement

Questions addressing the levels of youth involvement in 15 different activities were used to assess youth involvement. Garden leaders were asked to rank the amount of involvement in each activity on a five point scale ranging from “Strongly Disagree” to “Strongly Agree.” These activities included carrying out typical gardening activities, making decisions about the garden, managing and directing some of the gardening activities, raising money for the garden, making decisions about money for the garden, working with adult leaders on overall management of the garden, representing the garden in the community through community boards or other projects, talking to others about the garden through media interviews and public speaking, evaluating garden activities, leading workshops on gardening for other youth or community members, leading special activities at the garden, selling produce at farmers’ markets, donating produce to

food pantries in the community, teaching others how to cook and leading tours at the garden.

These questions were adapted from Lekies and Eames-Sheavly (2007).

Skills Learned

Garden leaders were asked to rank the impact of gardening on different skills. This was done on a five point scale ranging from “No Impact” to “A Great Deal of Impact.” The skills analyzed included leadership skills, teamwork skills, communication skills, critical thinking skills and a sense of responsibility. Also, this study looked at the levels of two interest groups—concern for the environment and awareness of food issues.

Skills Used Outside of the Garden

One open ended question asked garden leaders to document the ways youth gardeners used their skills outside of the garden.

Support Needed for Garden Leaders

Garden leaders were asked what support would be useful to aid in working with youth in their program. Ten options were given, and garden leaders were asked to respond with either “Yes” or “No” as to whether these resources would be useful. These included developing leadership skills in youth, conflict resolution, developing interpersonal skills, working with different generations, developing workforce skills, working with youth with special needs, developing critical thinking skills, diversity and cultural awareness, developing gardening skills and knowledge, and recruitment and retention.. An open ended response option also allowed them to specify other resources they would find helpful.

Garden Characteristics

Descriptive characteristics about the garden were also recorded. Garden location, reasons for youth participation and age groups involved were all of interest. The survey asked gardeners

to identify their location, which ranged from a large urban area to rural area/countryside. The survey also allowed the specific location such as public school, park or vacant lot to be identified.

Respondents were asked to identify if their youth gardeners were under the age of eight, between eight and 12 or between 13 and 19 years old. Questions in the second section of the survey, Youth Involvement in the Garden, allowed respondents to elaborate on specific types and levels of youth involvement. This varied from garden to garden.

Data Analysis

Qualtrics recorded participants' responses, and the results were analyzed using SPSS for Windows. Frequencies were run for each of the questions relating to the study objectives. *T*-tests were also used to identify if there are differences in skills learned based on the amount of leadership opportunities available in the gardens. Open-ended responses were also analyzed.

Chapter IV

Findings

This chapter will analyze the findings of the study survey. Data was collected using an online Qualtrics survey and then run through the SPSS program.

Garden Information

Of the 71 completed surveys, 16.9% participated in a garden located at a public school, 1.4% at a private school, 4.2% at a child care center, 9.9% at a park, 2.8% at a recreation center, 2.8% at a public housing complex, 19.7% at a religious organization's property, 21.1% at a non-profit organization's land and 19.7% at a vacant lot.

The largest number of gardens, 45.1%, were located in large urban areas. 9.9% of gardens were located in mid-sized cities, 22.5% in suburban areas, 16.9% in small towns, 1.4% in rural areas/country sides and 4.2% of gardens were located in other areas. All gardens were located within the state of Ohio.

Youth Involvement

Of gardens with actively involved youth, 43 reported working with children under eight years old, 47 with eight through 12 year olds and 40 with 13-19 year olds. A total of 58 gardens indicated they had a youth component.

The gardens all had different numbers of youth involved during the gardening season. The three most common levels of youth involvement were 50 or more youth involved during the gardening season (15 gardens), less than 10 youth involved (15 gardens) and 10 to 19 youth involved (12 gardens). Only six gardens reported involving 20-29 youth gardeners. Two gardens involved 30-39 youth gardeners, and only one involved 40-49 youth gardeners. The vast majority

of youth gardeners are unpaid, with 45 gardens paying no youth gardeners, five gardens paying some and only two gardens paying all involved youth.

The survey also asked the motivation behind youth participation. Five choices were given, and garden leaders could indicate yes or no to each option. This left the possibility for more than one selection per garden. A sixth option of “Other,” where garden leaders could answer with an open ended response, was also provided. Other responses included youth participation as part of a camp, horticultural therapy program, work experience, volunteer group, domestic violence group or family activity. Table 1 shows the other responses.

Table 1: Why Youth Participate in Gardening Programs

Participation	N	Frequency(number of gardens responding yes)
Participate as part of a school class	40	23
Participate as part of a 4-H club	30	5
Participate as part of another out-of –school group (such as an organized youth group, church group, club or special program)	37	25
Participate as part of a court-ordered program	27	2
Participate on their own/not as part of a program or group	36	30

Objective 1: What leadership opportunities are currently available to youth?

The gardens were divided into those offering many opportunities and those offering few opportunities. Gardens offering few opportunities were defined as those responding “Strongly Disagree,” “Disagree” or “Undecided.” Gardens with many opportunities were defined as those responding “Agree” or “Strongly Agree.” The five most common activities were carrying out typical gardening activities, making decisions about the garden, donating produce to food pantries in the community, working with adult leaders on garden management and managing and directing garden activities. The five least common activities were making decisions about money

for the garden, leading workshops on gardening, selling produce at farmers' markets, teaching others how to cook and raising money for the garden.

Table 2: Leadership Opportunities Available to Youth (N=51-52)

Activity	Few Opportunities (Frequency, %)	Many Opportunities (Frequency, %)
Carry out typical gardening activities (planting, watering, harvesting)	1, 2%	51, 98%
Make decisions about the garden (what to plant, what to do with produce, etc...)	23, 44%	29, 56%
Donate produce to food pantries in the community	23, 44%	29, 56%
Work with adult leaders of the garden on overall management of the garden	27, 52%	25, 48%
Manage and direct some of the gardening activities	33, 63%	19, 37%
Evaluate garden activities	34, 65%	18, 35%
Lead special activities at the garden (such as activities during festivals, teaching younger children, etc...)	35, 67%	17, 33%
Lead tours at the garden	38, 73%	14, 27%
Represent the garden in the community through community boards or other projects	40, 77%	12, 23%
Talk to others about the garden through media interviews and public speaking	37, 71%	15, 29%
Teach others how to cook	43, 83%	9, 17%
Raise money for the garden	42, 81%	10, 19%
Lead workshops on gardening for other youth or community members	46, 90%	5, 10%
Sell produce at farmers' markets	45, 87%	7, 13%

Make decisions about money for the garden (making a budget, deciding how to spend money, etc...)	46, 90%	5, 10%
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Objective 2: What skills have youth developed from gardening?

The impact of gardening on leadership skills, teamwork skills, communication skills, critical thinking skills, a sense of responsibility, the ability to work with adults and the ability to work with other youth were especially important to answering this question. A sense of responsibility showed the most positive impact from gardening with an average of 3.96. Of these options, gardening next most positively impacted the ability to work with other youth, teamwork skills, the ability to work with adults, communication skills, critical thinking skills and leadership skills. All of these skillsets had means greater than three, which means that the majority of garden leaders saw at least some positive impact from gardening on these skillsets. Table 3 shows the level of impact gardening has had on all of these skills as well as several other opinion questions.

Table 3: Positive Impact of Gardening on Various Skillsets

Question	N	Mean	Standard Deviation
Sense of responsibility	51	3.96	0.92
Awareness of food issues	51	3.94	1.01
Teamwork skills	51	3.86	1.00
Concern for the environment	51	3.78	1.15
Communication skills	50	3.58	1.13
Critical thinking skills	50	3.44	1.05
Leadership skills	50	3.20	1.29

Objective 3: Has gardening positively impacted important skillsets?

Next, *t*-tests were run to examine differences in skills, awareness of food issues and concern for the environment between gardening programs offering higher and lower levels of youth involvement. Five types of skills were examined and combined into one variable, “Total Skills.”

The five leadership activities used to complete *t*-tests were making decisions about the garden (what to plant, what to do with produce, etc.), managing and directing some of the gardening activities, working with adult leaders of the garden on overall management of the garden, evaluating garden activities and leading special activities at the garden (such as activities during festivals, teaching younger children, etc.). This list excluded donating produce to local food pantries. The “Total Skills” set included leadership skills, teamwork skills, communication skills, the ability to work with adults, the ability to work with other youth and a sense of responsibility (see Table 3 for all skill and interest sets). The mean and standard deviation values for “total skills” were found by summing the involved skills. Table 4 shows the results of the *t*-tests.

Table 4: Results of the t -test[illegible]

the gardening activities									
	Total skills	16.13	4.30	21.26	3.18	48	-4.50	.000	-1.359
	Concern for the environment	3.50	1.14	4.26	1.05	49	-2.39	.021	-.696
	Awareness of food issues	3.66	1.00	4.42	.838	49	-2.79	.007	-.822
Working with adult leaders of the garden on overall management of the garden									
	Total skills	17.12	5.26	19.04	3.74	48	-1.49	.143	-.421
	Concern for the environment	3.50	1.18	4.08	1.08	49	-1.84	.072	-.515
	Awareness of food issues	3.62	1.02	4.28	.891	49	-2.47	.017	-.688
Evaluating garden activities									
	Total skills	16.69	4.70	20.56	3.33	48	-3.08	.003	-.950
	Concern for the environment	3.61	1.20	4.11	1.02	49	-1.51	.137	-.449
	Awareness of food issues	3.82	1.07	4.17	.857	49	-1.18	.242	-.360
Leading special activities at the garden									
	Total skills	17.48	4.34	19.24	5.06	48	-1.28	.208	-.372
	Concern for the environment	3.71	1.12	3.94	1.25	49	-.68	.498	-.194
	Awareness of food issues	3.91	1.03	4.00	1.00	49	-.29	.772	-.089

Significantly higher ($p<.05$) levels of total skills were found for gardens with more opportunities for making decisions about the garden, managing and directing some of the

gardening activities and evaluating garden activities. Concern for the environment was also significantly ($p < .05$) higher for gardens with more opportunities for making decisions about the garden and managing and directing some of the gardening activities. Awareness of food issues was also significantly ($p < .05$) higher for gardens with more opportunities for making decisions about the garden, managing and directing some of the gardening activities and working with adult leaders of the garden on overall management of the garden. Leading special activities at the garden was the only activity that did not show a significant difference in impact on total skills, concern for the environment or awareness of food issues.

Objective 4: What leadership opportunities have youth demonstrated outside of the gardening program?

Garden leaders were also asked to describe what leadership opportunities they were aware of their youth gardeners taking advantage of outside the garden. The responsiveness of garden leaders varied from one word responses to very detailed descriptions of leadership activities. Some leaders also listed skills their youth used in settings such as at home or at school. These skills included conflict management, teamwork, leadership, diversity awareness, patience, managing stress and communication.

Home gardening is another popular outlet for applying skills learned in the garden. About eight different leaders mentioned activities including canning produce at home, taking plants and produce home from the garden to share with the family, taking plants home to teach siblings, parents and grandparents about gardening and to start their own garden or starting home food-production gardens.

Also, many respondents indicated their youth try to help or start other gardens. Youth have been known to reach out to other gardens and explain what is going on. In one garden, high

school students mentor preschool students in the garden. The high school students have developed a schedule and structure for their program so that it is easy to replicate each year. Garden leaders have had their youth come to them and ask how to start community gardens in other places like their church. Older youth gardeners have tried to help their own garden by learning how to use power tools to create raised gardens. Youth gardeners are able to see the results of their efforts in the garden and are eager to learn more. They set examples for younger family members by confirming what they do and what they have done. Leadership by example seems to be used a lot in gardening.

Eating healthy seems to be very important to youth gardeners as well. Garden leaders have observed their youth talking to people about eating more fresh vegetables, eating healthier and asking parents to purchase fresh fruits and vegetables from their gardens. A garden leader also mentioned gardening makes youth more willing to try new vegetables that they have harvested themselves. Outside of the garden, youth gardeners have participated in farmer's markets. One youth gardener even uses social media outlets to promote fresh foods by posting pictures of fruits and vegetable to Facebook. This is also an outlet to share garden experiences with friends.

A variety of other forms of involvement were also listed. One youth gardener in Columbus went on to intern at Franklinton Gardens. Other youth gardeners presented at a community showing of a documentary about sustainable agriculture. Some also participated in an independent hydroponics study. A garden leader noted their youth gardeners have grown to see gardening as a relaxation tool that can be used in the future. Another garden leader specified they welcomed 35 kids from Catholic Heart to Heart. Catholic Heart to Heart is a national youth group that comes to Toledo each year, and the leader believes all of the 35 kids took what they

learned back with them. Scouts and school are two common outlets for youth gardeners to apply the skills they have learned through gardening.

Objective 5: What resources would benefit garden leaders?

Garden leaders were asked which resources (training, information or services) they thought would be helpful in working with youth at their gardens. Nine possible topics were listed, and garden leaders were asked to answer yes or no as to whether they felt these resources would be helpful. An open-ended “Other” option was also available. An overwhelming majority of garden leaders requested many of the resources. They most commonly requested resources dealing with gardening skills and knowledge. These resources were requested by 41 gardens, which is 85.4% of the respondents to that question. The next most commonly requested resources were those dealing with developing leadership skills in youth. Thirty-four of the 47 gardens that responded wanted these. Table 5 gives the responses for each of the types of resources.

There were eight responses to the “Other” option. Two garden leaders requested financial resources—funding for youth gardens and fundraising to hire a paid garden coordinator. Another garden leader wanted resources dealing with the conservation of resources. Safety training, including training to use tools and how to avoid injury while in the garden, was also requested. Other responses included resources pertaining to group dynamic games, healthy eating habits and nutrition and teaching gardening basics were also suggested. One garden leader welcomed any support.

Table 5: Resources Wanted by Garden Leaders (N=45-48)

Resource	Number of Yes Responses	% Yes Responses
Developing leadership skills in youth	34	72.3

Conflict resolution	27	58.7
Developing interpersonal skills	32	69.6
Working with different generations	26	54.2
Developing workforce skills	26	57.8
Working with youth with special needs	26	55.3
Developing critical thinking skills	31	66.0
Diversity and cultural awareness	24	53.3
Developing gardening skills and knowledge	41	85.4
Recruitment and retention	25	53.2

Chapter V

Summary, Key Findings and Implications

Data for this study was collected from responses to an online survey. Responses were gathered between December 2012 and January 2013. The survey requested information pertaining to the type of garden, availability of leadership opportunities and garden leader information. Seventy-one surveys came from gardens in Ohio that involved youth gardeners.

Purpose of the Study

This study's purpose was to identify youth leadership opportunities in community gardens and the benefits of participation. Leadership opportunities include making decisions about the garden, evaluating garden activities, working with adults to manage the garden, leading special activities and managing & directing garden activities. Benefits include improving a variety of skillsets, awareness of food issues and environmental concern. To determine this, gardens in Ohio with actively involved youth were surveyed.

Objectives

Since very little research has been done regarding youth leadership in community gardens, this study is unique and will hopefully spark more interest in the subject. The three objectives for this study were to determine:

1. What leadership opportunities are currently available to youth?
2. What skills have youth developed from gardening?
3. Has gardening positively impacted important skillsets?
4. What leadership opportunities have youth demonstrated outside of the gardening program?
5. What resources would benefit garden leaders?

Limitations of the Study

This study only looked at gardens in Ohio with actively involved youth. Since gardens were identified using various Google searches, the gardens had to have an online presence or have a garden leader with an online presence. Also, garden leaders had to have access to the Internet in order to complete the survey. Of the more than 200 surveys sent out, 108 were returned, and only 59 produced usable responses. The survey was open for only two months, so some gardens may not have had a chance to respond. The findings from this study may not be applicable to gardening programs in areas outside of Ohio because of these limitations. They do, however, show many positive benefits of youth gardening in Ohio.

Researchers do not know how representative of the overall youth gardens this is. The full scope of programs may not be represented in this study. This study also looks at the perceptions of adult leaders. It is not based on actual skills. Youth gardeners themselves were not asked any questions either. This survey did not cover what improvements the youth saw in their own behavior or what skillsets they feel they have improved. When reading this study, all of these limitations should be taken into account. This study can be viewed as a good starting point for future research topics.

Key Findings and Implications

Youth gardening programs are beginning all over the United States. This study looked at the benefits of participation in these programs, and it identified what leadership opportunities are available to youth gardeners in Ohio. This section discusses the key findings of the study and how they relate to the study's different objectives.

Objective 1: What leadership opportunities are currently available to youth?

The study showed that not many youth leadership opportunities are common in Ohio's community gardens. Almost all gardens reported that youth are involved in carrying out typical gardening activities. These constitute the definition of gardening, so it is not surprising that they are the most common opportunities. Approximately half of the gardens allowed their youth to make decisions about the garden, donate produce to local food pantries or work with adult leaders of the garden on overall garden management. However, nine of the remaining activities were only offered in one third or fewer gardens. This shows that there is much opportunity for gardens to offer more leadership experiences to their youth gardeners. Gardening does positively impact leadership skills, so offering more of these opportunities could improve leadership and other skillsets even more. Gardens are a great outlet for youth to learn from and interact with adults. Also, a garden would not be possible if basic garden activities such as planting, harvesting and watering did not occur. The most surprising in this group was donating produce to local food pantries. This may indicate that most of the gardens grow produce, or a mix of produce and flowers, as opposed to just flowers. Also, this may indicate a focus on service learning.

The three activities dealing with money (making decisions about money for the garden, selling produce at a farmers' market and raising money for the garden) made up three of the four least common activities. Offering these activities more would give youth gardeners budgeting and money handling experience. If this was offered more, then researchers could look at the impact of gardening on a sense of financial responsibility.

Since many of these opportunities are not offered in the surveyed gardens, introducing one or two would be very beneficial to the involved youth. As discussed in the results section, there seems to be a relationship between offering different leadership activities and the positive

impact of gardening on different skillsets or interests. If more activities are offered, then the various skillsets could potentially be impacted to an even greater degree. Also, this raises the question of whether other youth leadership opportunities are offered in gardens. An open-ended “Other” option was not available for this question in the survey. Garden leaders provided a variety of responses to the open-ended question asking if they were aware of any ways their youth used skills from gardening outside of the garden, so other options, so there may be various leadership opportunities offered in gardens that were not covered in this survey.

It would also be of interest to see if the leadership opportunities offered increased with the age of the gardeners. As youth grow older, they develop more skills and are capable of taking on more responsibility. Therefore, it is possible that more opportunities are available to high school age gardeners than preschool age gardeners. Unfortunately, there were not enough responses from separate and distinct age groups to evaluate this using this survey.

Objective 2: What skills have youth developed from gardening?

Despite the limited number of leadership opportunities, garden leaders have definitely seen improvement in many skillsets. A sense of responsibility was the most positively impacted by gardening followed by teamwork skills, communication skills, critical thinking skills, communication skills and leadership skills. This shows that any level of gardening activity helps youth gardeners to build these skillsets, which are applicable in many different areas of life like school.

Objective 3: Has gardening positively impacted important skillsets?

The *t*-tests discussed in the results section indicate that various gardening activities definitely have an impact on various skillsets, awareness of food issues and environmental concern. Leadership skills, teamwork skills, communication skills, critical thinking skills and a

sense of responsibility were included in the “Total Skills” part of the *t*-tests. The ability to work with adults and the ability to work with other youth were not included because these are a part of teamwork skills. This suggests that the activities offered do not provide youth gardeners with opportunities to practice their leadership skills as much as other skills. Helping decide what to plant may improve communication skills through allowing youth gardeners to voice their opinions, but this activity does not necessarily lend itself to youth becoming leaders. Some of the less offered activities, like leading garden tours, could help develop both communication and leadership skills. Communication skills would be developed because youth gardeners would have to explain different parts of the garden to people participating in tours. Leadership skills would also be developed because they would have to learn how to adapt each tour to the group and how to make the participants interested in learning more about the garden. Successful leaders are able to work with many different personalities and effectively communicate important concepts. It is important to note that while leadership skills were impacted least by gardening, the average is still 3.20. This shows that gardening has had more than just some impact on leadership skills. Offering more leadership opportunities would increase this even more, though. Making decisions about the garden and managing and directing some of the gardening activities are the only two activities that showed a significant impact on total skills, concern for the environment and awareness of food issues. Therefore, more gardens should strive to offer more opportunities for making decisions about the garden or managing and directing some of the gardening activities. Leading special activities at the garden did not have significant impact on any of those categories.

Objective 4: What leadership opportunities have youth demonstrated outside of the gardening program?

Outside of the gardening program, youth have demonstrated many leadership qualities. Of the responses received, home gardening, helping with other gardens and eating healthier were the most frequent responses. Many youth gardeners take what they learn in the garden home with them to create their own gardens and educate family members. They also want to help other gardens in the area learn, so they will visit and help or even start more gardens. Older youth play a key role in inspiring and teaching younger youth. With regards to eating healthier, many gardeners even take this a step further by educating others about eating healthier. Youth gardeners are more apt to try new foods and request healthier purchases from the grocery store. They also like to eat produce they have grown in their own gardens. All of these show a desire to teach others about gardening and the foods produced.

Objective 5: What resources would benefit garden leaders?

Garden leaders seemed very enthusiastic about new resources. Over half of the gardens wanted each of the resources suggested. The most commonly requested resources (85.4% of garden leaders indicated they would appreciate these) were those pertaining to developing gardening skills and knowledge. The next highest requested resources were those pertaining to developing leadership skills in youth (72.3%). This shows that the vast majority of garden leaders do not simply want to give youth gardeners a packet of seeds and explain how to plant and water them. Garden supervisors want to develop their youth into leaders.

This seems to contradict the lack of availability of leadership opportunities in gardens. Or this could show a lack of either access to or quality of resources available to garden leaders. Only six of the 50 responding gardeners use 4-H materials to develop activities for their involved youth. The gardens who responded yes went on to say that they only use the material sometimes, need more materials, use it for award certificates at the end of the year, or have tried to use the

materials. It is unknown whether the garden trying to use the materials was successful or unsuccessful. Only one garden reported on the specific materials used—Go Plants and a Franklin County Master Gardener journal. The following question asked if leaders utilized other specific curriculum and received 22 responses. Five respondents have developed their own gardening program or use the garden to pass knowledge on from generation to generation. Four gardens responded that they do not use any formal program and one uses information from the Master Gardeners program but does not use a formal program. The gardens that did not respond to this question may also not use any formal program. These responses show that resources are available to garden leaders. Therefore, something about the programs must be unappealing to garden leaders. More research needs to be done to see why these programs are not being used in more gardens.

Implications of Key Findings

People involved with youth gardening should take note of the findings from this study. This includes garden program creators, garden leaders, youth gardeners and people interested in the development of skills in youth.

Community gardens in Ohio that involve youth offer a limited number of leadership opportunities. Despite the limited opportunities, garden leaders have definitely seen an improvement in leadership, communication, teamwork and critical thinking skills along with an improved sense of responsibility and a better ability to work with other youth and adults. Involved youth also seem more aware of environmental concerns and food issues. Since the five most common leadership opportunities have been shown to have significant effects on these skillsets, it is reasonable to conclude that more leadership opportunities in gardens would improve these skills even more.

Fortunately, garden leaders are very open to new resources. Between 50% and 86% of garden leaders wanted each of the suggested resources listed in the study, and some leaders even indicated they wanted more resources than those. This shows that garden leaders want to develop their youth and provide them with leadership opportunities. Hopefully, these resources will soon become available and gardening will show even more of a positive effect on various skillsets.

Most community gardens that responded to this survey do not currently use formal gardening programs or have developed their own. This has two possible outcomes. First, garden leaders could use this as an opportunity to create leadership positions for current youth. This would help further develop their skillsets. One gardener responded to this survey and indicated that they created their own program where the older gardeners are able to teach preschool age gardeners about the garden according to outlined program guidelines. This would create leadership positions for current older youth gardeners as well as positions for the younger gardeners to grow into. Self-made programs like this also allow for immediate adaptation to any changes in the garden. For example, older gardeners could teach younger ones about their areas of interest. If one gardener is interested in cucumbers and another is interested in tomatoes, then they could each teach about the one vegetable. Another outcome is that further studies can be done to see what makes certain gardening programs successful. Some gardens have stood the test of time for decades, but others last only a few years. This may be due to involvement. More leadership opportunities would give youth incentive to remain involved over the years. Formal programs that allow for many leadership opportunities could work to target improvement in specific skillsets. Overall, more leadership opportunities would help improve transferrable skills in youth gardeners.

Garden leaders need to consider creating more leadership opportunities for the involved youth. This change does not need to happen overnight, but additional leadership opportunities would greatly benefit involved youth. Youth gardeners also need to be made aware of the benefits of their participation. If they understand the resultant benefits, then they may be more inclined to take on leadership roles and encourage others to do the same.

More research into the benefits of youth gardening and effectiveness of different programs would be very beneficial to gardening programs throughout the United States and possibly the world. This project was limited to the state of Ohio, but that does not mean studies in other states will not produce similar results. Studies in other areas may also bring to light new leadership opportunities not currently used in Ohio. Future studies could also focus in on specific gardens.

By taking the case study approach, researchers could analyze why specific programs are successful at certain gardens, why youth choose to participate (whether this be at low or high levels of participation) and what skills are most positively impacted. Proper application of the findings will result in youth gardeners thriving even more from their participation in gardening.

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